The JNC VI Guide To Prevention and Treatment of Hypertension Recommendations

Blood Pressure Measurement

Patient should:

- Rest for 5 minutes before measurement.
- Refrain from smoking or ingesting caffeine for 30 minutes prior to measurement.
- Be seated with feet flat on floor, back and arm supported, arm at heart level.

Clinician should:

- Use the appropriate size cuff for the patient; the bladder should encircle at least 80 percent of the upper arm.
- Use calibrated or mercury manometer.
- Average two or more readings, separated by at least 2 minutes.

Primary Prevention

Encourage patients to make healthy lifestyle choices:

- Quit smoking to reduce cardiovascular risk.
- Lose weight, if needed.
- Restrict sodium intake to no more than 100 mmol per day.
- Limit alcohol intake to no more than 1-2 drinks per day.
- Get at least 30-45 minutes of aerobic activity on most days.
- Maintain adequate potassium intake—about 90 mmol per day.
- Maintain adequate intakes of calcium and magnesium.

Goal

Set a clear goal of therapy based on patient's risk. Control blood pressure **to below:**

- 140/90 mm Hg for patients with uncomplicated hypertension; set a lower goal for those with target organ damage or clinical cardiovascular disease.
- 130/85 mm Hg for patients with diabetes.
- 125/75 mm Hg for patients with renal insufficiency with proteinuria greater than 1 gram per 24 hours.

Treatment

Begin with lifestyle modifications (see primary prevention box) for all patients. Be supportive!

- Add pharmacologic therapy if blood pressure remains uncontrolled.
- Start with a diuretic or beta-blocker unless there are compelling indications to use other agents. Use low dose and titrate upward. Consider low dose combinations.
- If no response, try a drug from another class or add a second agent from a different class (diuretic if not already used).

Adherence

- Encourage lifestyle modifications. Be supportive!
- Educate patient and family about disease. Involve them in measurement and treatment.
- Maintain communications with patient.
- Discuss how to integrate treatment into daily activities.
- Keep care inexpensive and simple.
- Favor once-daily, long-acting formulations.
- Use combination tablets, when needed.
- Consider using generic formulas or larger tablets that can be divided. This may be less expensive.
- Be willing to stop unsuccessful therapy and try a different approach.
- Consider using nurse case management.

NATIONAL INSTITUTES OF HEALTH
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE

JNC VI Risk Stratification and Treatment Recommendations

- Determine blood pressure stage.
- Determine risk group by major risk factors and TOD/CCD.
- Determine treatment recommendations (by using the table below).
- Determine goal blood pressure.
- Refer to specific treatment recommendations.

Major Risk Factors

- Smoking
- Dyslipidemia
- Diabetes mellitus
- Age > 60 years
- Gender :
  - Men
  - Postmenopausal women
- Family history :
  - Women < age 65
  - Men < age 55

TOD/CCD (Target Organ Damage/ Clinical Cardiovascular Disease)

Heart diseases
- LVH
- Angina/prior MI
- Prior CABG
- Heart failure

Stroke or TIA
Nephropathy
Peripheral arterial disease
Hypertensive retinopathy

Blood pressure stages (mm Hg)	Risk Group A No major risk factors No TOD/CCD	Risk Group B At least one major risk factor, not including diabetes No TOD/CCD	Risk Group C TOD/CCD and/or diabetes, with or without other risk factors
High-normal (130-139/85-89)	Lifestyle modification	Lifestyle modification	Drug therapy for those with heart failure, renal insufficiency or diabetes Lifestyle modification
Stage 1 (140-159/90-99)	Lifestyle modification (up to 12 months)	Lifestyle modification (up to 6 months) For patients with multiple risk factors, clinicians should consider drugs as initial therapy plus lifestyle modifications.	Drug therapy Lifestyle modification
Stages 2 and 3 (≥160/≥100)	Drug therapy Lifestyle modification	Drug therapy Lifestyle modification	Drug therapy Lifestyle modification

Example: A patient with diabetes and a blood pressure of 142/94 mm Hg plus left ventricular hypertrophy should be classified as having stage 1 hypertension with target organ disease (left ventricular hypertrophy) and with another major risk factor (diabetes). This patient would be categorized as **Stage 1, Risk Group C,** and recommended for immediate initiation of pharmacologic treatment.

Goal Blood Pressure

<140/90 mm Hg	Uncomplicated hypertension, Risk Group A, Risk Group B, Risk Group C except for the following:
<130/85 mm Hg	Diabetes; renal failure; heart failure
<125/75 mm Hg	Renal failure with proteinuria > 1 gram/24 hours

SPECIFIC TREATMENT RECOMMENDATIONS

Lifestyle modification should be definitive therapy for some patients and adjunctive therapy for all patients recommended for pharmacologic therapy. Turn page over for a list of recommended lifestyle modifications.

INITIAL DRUG CHOICES

- Start with a low dose of a long-acting once-daily drug, and **titrate dose**
- Low-dose combinations may be appropriate

Uncomplicated Hypertension

Diuretics
Beta-blockers

Compelling Indications

Diabetes type 1 (IDDM)	start with ACE inhibitor if proteinuria is present
Heart failure	start with ACE inhibitor or diuretic
Myocardial infarction	beta-blocker (non-ISA) after MI; ACE inhibitor for LV dysfunction after MI
Isolated systolic hypertension (older patients)	diuretics (preferred) or calcium antagonists (long-acting DHP)

Specific Indications for the Following Drugs:

(See Table 9 in JNC VI for specific indications)
ACE inhibitors
Angiotensin II receptor blockers
Alpha-blockers
Alpha-beta-blockers
Beta-blockers
Calcium antagonists
Diuretics

From *The Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.* *Arch Intern Med* 1997; 157:2413-2446. NIH Publication No. 98-4080. For a copy of JNC VI, call the National Heart, Lung, and Blood Institute Information Center at 301-251-1222.